Bull. Mus. natn. Hist. nat., Paris, 4e sér., **12**, 1990,
section A, n° 1 : 69-73.

Hydrothermal vent fauna : *Agauopsis auzendei* n. sp. (Acari, Halacaridae)

by Ilse BARTSCH

Abstract. — In 1988 investigations with the submersible "Nautile" were made at the Snake Pit, 23°22,09′ N, 44°57,12′ W, a volcanic ridge in the Mid-Atlantic Ridge. Sediment samples taken at the base of an active chimney contained halacarid mites, viz. *Agauopsis auzendei* n. sp. The species is described and figured. The species has no marked external characters distinctly separating it from shallow water species.

Key words. — Mid-Atlantic Ridge, volcanic vent biota, marine mites.

Résumé. — Sur la ride volcanique du Snake Pit, 23°22,09′ N, 44°57,12′ W, à l'axe de la dorsale médio-Atlantique, ont été capturés quatre spécimens d'halacariens par le submersible « Nautile » (campagne HYDROSNAKE 1988). L'espèce *Agauopsis auzendei* n. sp. est décrite et figurée. Cette espèce n'a pas de modifications morphologiques frappantes pour mener une vie hydrothermale et abyssale.

I. BARTSCH, *Biologische Anstalt Helgoland, Notkestr. 31, 2000 Hamburg 52, FR Germany.*

INTRODUCTION

The Snake Pit, located at 23°22,09′ N, 44°57,12′ W, is a volcanic and tectonically active portion of the Mid-Atlantic Ridge comprised of pillow lavas and lava tubes (KONG *et al.*, 1985; MEVEL *et al.*, 1989). In recent years its hydrothermal vent biota has been investigated, e.g., with the submersible "Alvin" (GRASSLE *et al.*, 1986) and during the HYDROSNAKE cruise from June 12 to July 14, 1988 with the R/V "Nadire" and the submersible "Nautile" (organized by Université VI, Paris, chief scientist C. MEVEL). Ten dives were made to the dome of the Snake Pit to study biology, geology, mineralogy, gravimetry, and chemistry of hydrothermal fluids. During dive HS10 (observer M. SEGONZAC), biological material and sediment was taken at the base of an active chimney at 3478 m depth. According to observations, the hydrothermal vents at the Snake Pit are characterized by an abundance of shrimps at the chimneys; around the vents, the fauna consists of anemones, worm tubes, large gastropods, bivalves, crabs, and zoarcid fishes (GRASSLE *et al.*, 1986; MEVEL *et al.*, 1989).

The biological material taken during dive HS10 was sorted in the Centre National de Tri d'Océanographie Biologique (IFREMER, Brest) and the four halacarid specimens found placed at my disposal.

Agauopsis auzendei n. sp.

MATERIAL : One female, 3 deutonymphs. Mid-Atlantic Ridge, Snake Pit, 23°22,09′ N, 44°57,12′ W, 3478 m. Sediment from the base of an active chimney. The female holotype and a deutonymph paratype are deposited in the Muséum national d'Histoire naturelle, Paris.

ETYMOLOGY : The species is named in honour of the geologist J.-M. AUZENDE, participant in the HYDROSNAKE cruise.

DESCRIPTION

Female

Idiosoma length 614 μm, width 395 μm. All dorsal plates reticulate. Anterior dorsal plate almost as wide as long, broadly rounded both anteriorly and posteriorly. Ocular plates almost as long as wide; with a transverse canaliculus close to posterior edge; neither cornea nor gland pore distinguishable. Posterior dorsal plate with 2 narrow, longitudinal costae (fig. 1 A). Dorsal setae long; first pair (ds-1) inserted on anterior dorsal plate at level of insertion of leg I, ds-2, ds-3 and ds-4 within striated integument, ds-5 on posterior dorsal plate, lateral to longitudinal costae, ds-6 on anal cone. Membranous integument with minute cuticular cones.

Ventral plates marginally reticulate, ventrally very faintly pitted. No epimeral pores on anterior epimeral plate. Anterior plate with 3 pairs of long ventral setae, posterior epimeral plate with 2 dorsal (marginal) and 2 ventral setae. Genitoanal plate with 2 pairs of setae. Genital opening (GO) large, distance to anterior margin of genitoanal plate less than GO's length. Genital sclerites with 3 small setae. Ovipositor long, surpassing genital opening for GO's length (fig. 1 B).

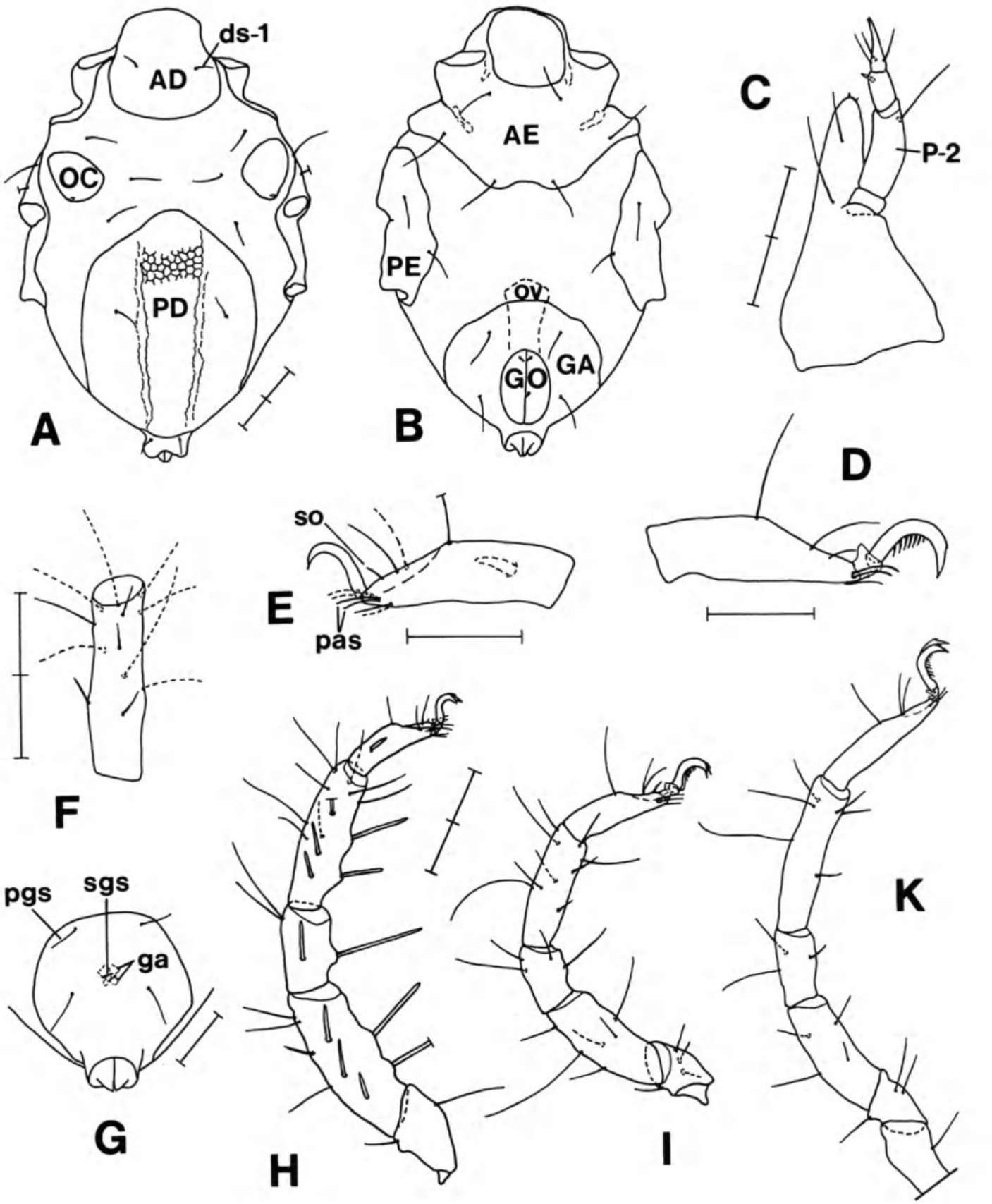
Gnathosoma length 194 μm. Gnathosoma slender, its base slightly longer than wide. Rostrum elongate triangular. Both pairs of maxillary setae inserted on rostrum. Palps 4-segmented, distinctly extending beyond tip of rostrum (fig. 1 C). Second palpal segment (P-2) with a dorsal seta, P-3 with a medial spine, P-4 with 3 setae in the basal whorl.

Legs almost as long as idiosoma. Leg I slightly wider than the other legs, with long, narrow spines; telofemur and tibia both with 3 ventromedial and 2 ventrolateral spines, genu with a pair of spines, and tarsus with a ventromedial spine (fig. 1 H). No spines on posterior

---

FIG. 1. — *Agauopsis auzendei* n. sp. : A, idiosoma, dorsal view; B, idiosoma, ventral view; C, gnathosoma, lateral view; D, tarsus II, medial view (lateral setae omitted); E, tarsus I, lateral view (medial setae dashed); F, tibia II, ventral view (dorsal setae dashed); G, genitoanal plate; H, leg I, basifemur to tarsus, medial view; I, leg II, basifemur to tarsus, medial view; K, leg IV, ventrolateral view.

Figure 1 G from a deutonymph, the others from the holotype female. Each scale division represents 50 μm. (AD anterior dorsal plate; AE anterior epimeral plate; ds-1 first dorsal seta; GA genitoanal plate; ga genital acetabula; GO genital opening; OC ocular plate; ov ovipositor; P-2 2nd palpal segment; pas parambulacral setae; PD posterior dorsal plate; PE posterior epimeral plate; pgs perigenital seta; sgs subgenital seta; so solenidion.)


ds-1
AD
OC
PD
A
AE
PE
OV
GO
GA
B
C
P-2
D
so
pas
E
F
pgs
sgs
ga
G
H
I
K

legs; tibia II with 3 ventromedial and 1-2 ventrolateral bristles (figs 1 F, I), tibia III with 3-4, tibia IV with 3 ventral bristles (fig. 1 K). Tip of tarsus I with a pair of ventral setae and a pair of doubled parambulacral setae (fig. 1 E), tip of tarsus II with 1 ventral seta and a pair of doubled parambulacral setae (fig. 1 D), tarsi III and IV both with a pair of slender, seta-like parambulacral setae. Solenidion on tarsus I dorsolateral, on tarsus II dorsomedial in position. Leg chaetotaxy from segment 1 to 5 : Leg I 1, 2, 9-10, 4, 14; leg II 1, 3-4, 6-7, 4, 9-12; leg III 3, 3, 4, 3, 6-7; leg IV 1, 3, 4, 3, 6. Claws strong. All claws with accessory process. Claw comb with approximately 10 tines on the claw stem.

Deutonymph

Idiosoma length 440-504 μm, width 341-346 μm. Dorsal plates similar though smaller than those of adults. One of the nymphs with a adjunct pair of dorsal setae inserted at end of posterior dorsal plate (substitute for gland pore?). Anterior epimeral plates with 3 ventral setae, posterior epimeral plate with 2-3 marginal and 2 ventral setae. Genital plate fused with anal plate, with 2 pairs of perigenital setae (fig. 1 G); primordial genital slit with 1 pair of subgenital setae and 2 pairs of internal genital acetabula.

Gnathosoma similar to that of adults.

Leg I with long spines, telofemur and tibia both with 2 pairs of spines, genu with 1 pair of spines, and tarsus with 1 medial spine. Tibia II with 3 ventral bristles, tibiae III and IV each with 2 bristles.

Remarks

Agauopsis auzendei differs from all other species in having long palps and long spines on leg I. The majority of *Agauopsis* species have palps that hardly surpass the rostrum and 1-2 setae in the basal whorl of P-4. They also have posterior epimeral plates with 1 dorsal and 3 ventral setae, a female genitoanal plate with 3 pairs of setae, genital sclerites with no setae, and 2-3 ventral bristles on tibiae II. *A. auzendei*, however, has palps that surpass the rostrum and 3 setae in the basal whorl of P-4. The posterior epimeral plates have only 2 ventral setae, a genitoanal plate with 2 pairs of perigenital setae, and 3 setae on the genital sclerites. Furthermore, tibiae II has 4-5 ventral bristles. *A. auzendei* is not closely related to any of the species described to date. Some of its characteristics are reminiscent of species of the genus *Halacarellus*.

Several of the genera common in littoral waters also are represented in the abyss fauna (Bartsch, 1988). At present, the deepest records of *Agauopsis* are from 550-950 m, i.e. *A. producta* Newell, 1971, and *A. costata* Newell, 1971, both collected off San Felix Island, southeast Pacific (Newell, 1971, 1984). A third species from the Pacific, *A. bathyalis* Bartsch, 1989, was found amongst halacarid material taken off New Caledonia at 1400 m depth (Bartsch, 1989). The three species lack eye pigment; otherwise, there are no marked external characters that distinguish them from shallow water species. *A. auzendei*, too, shows no morphological pecularities.

The halacarid fauna associated with hydrothermal vent communities is poorly investigated. A single species, *Copidognathus papillatus* Krantz, 1982, was found amongst detritus of

mussel samples gathered at a depth of 2482 m in the eastern Pacific (Galapagos Rift) (KRANTZ, 1982). *Agauopsis auzendei* is the second species from a hydrothermal vent site. There is no obvious external specialisation that can be corrolated with life in the abyss or in volcanic hydrothermal vents.

Acknowledgements

Thanks are due to Dr. C. MEVEL, chief scientist of the HYDROSNAKE cruise, and Dr. M. SEGONZAC for making the collections and submitting the halacarids.

REFERENCES

BARTSCH, I., 1988. — Deep-sea halacarids (Acari) and description of a new species. *J. nat, Hist.*, **22** : 811-821.

— 1989. — Deep-sea mites (Halacaridae, Acari) from the southwestern Pacific. *Cah. Biol. mar.*, **30** : 455-471.

GRASSLE, F. J., S. E. HUMPHRIS, P. A. RONA, G. THOMPSON and C. L. VAN DOVER, 1986. — Animals at Mid-Atlantic Ridge hydrothermal vents. *Eos*, Washington, D.C., **67** (44) : 1022.

KONG, L., W. B. F. RYAN, L. A. MAYER, R. S. DETRICK, P. J. FOX and K. MANCHESTER, 1985. — Bare-rock drill sites. O.D.P. Legs 106 and 109 ; evidence for hydrothermal activity at 23° N on the Mid-Atlantic Ridge. *Eos*, Washington, D.C., **66** (46) : 936.

KRANTZ, G. W., 1982. — A new species of *Copidognathus* Trouessart (Acari, Actinedida, Halacaridae) from the Galapagos Rift. *Can. J. Zool.*, **60** : 1728-1731.

MEVEL, C., J.-M. AUZENDE, M. CANNAT, J.-P. DONVAL, J. DUBOIS, Y. FOUQUET, P. GENTE, D. GRIMAUD, J. A. KARSON, M. SEGONZAC and M. STIEVENARD, 1989. — La ride du Snake Pit (dorsale médio-Atlantique, 23°22′ N) : résultats préliminaires de la campagne HYDROSNAKE. *C. r. Acad. Sci., Paris*, sér. II, **308** : 545-552.

NEWELL, I. M., 1971. — Halacaridae (Acari) collected during cruise 17 of the R/V Anton Bruun, in the southeastern Pacific Ocean. *Anton Bruun Rep.*, **8** : 3-58.

— 1984. — Antarctic Halacaroidea. *Antarct. Res. Ser.*, **40** : 1-284.